



EUROPEAN PATENT APPLICATION

(21) Application number: **93301399.7**

(22) Date of filing: **25.02.93**

(51) Int. Cl.⁵: **A61K 7/08, A61K 7/50,
C11D 1/37, C11D 1/83,
C11D 1/94**

(30) Priority: **27.02.92 GB 9204175**

(43) Date of publication of application:
08.09.93 Bulletin 93/36

(84) Designated Contracting States:
**AT BE CH DE DK ES FR GB GR IE IT LI NL PT
SE**

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(54) **Cleansing composition.**

(57) The invention provides a cleansing composition, which comprises in addition to water, (a) from 10 to 30% by weight of one or more C₆ to C₁₆ acyl lactylates and (b) from 5 to 25% by weight of one or more co-surfactants, such as acyl taurates, isethionates, sarcosinates and sulphosuccinates. The cleansing compositions are primarily intended to be used as personal washing products, such as facial wash foams, bath foams and hair shampoos.

EP 0 559 375 A1

FIELD OF THE INVENTION

The invention relates to cleansing compositions. In particular, the invention is concerned with very mild and high foaming cleansing compositions suitable for cleansing the skin and hair.

BACKGROUND TO THE INVENTION AND PRIOR ART

The most widely used anionic surfactants in cleansing compositions are alkyl sulphates, polyoxyethylene alkyl sulphates and alkyl benzene sulphonates. These compounds are known to have a good foaming and deterging power. Due to their harshness, however, they are not desirable as components for cleansing compositions topically applied to human skin and hair. Their damaging effect particularly where young, tender or damaged skin is involved, has been the subject of intense study for many years.

On the other hand milder surfactants often suffer from the draw-back that they do not provide high foam which is very important for the consumer. Therefore, there is a strong need for products which are not only very mild but also possess an excellent foaming power.

US-A-3,728,447 (C J Patterson) discloses hair shampoo compositions containing fatty acid lactylates or glycolates. While the cleaning action of shampoos based on the fatty acid lactylates is satisfactory the foam is minimal. In order to achieve higher foaming action it is described to include harsh detergents such as sodium lauryl sulphate or triethanolamine lauryl sulphate. When the lactylates are used in conjunction with such a booster detergent the quantity of the lactylates present in the composition is reduced down to about 1 to 2% by weight.

EP-A-224 796 (Kao) describes a detergent composition comprising (a) a phosphate surfactant and (b) an acyl lactylate having an acyl group containing 12 to 18 carbons atoms. The detergent composition is said to have excellent foaming characteristics as well as excellent detergency and mildness to the skin and hair. It is taught that these characteristics are only achievable if the acyl lactylate is used in an amount of not more than 5% by weight and preferably not more than 3% by weight of the composition.

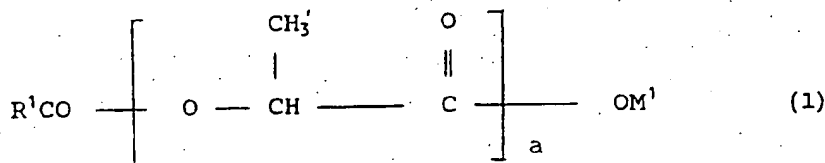
US-A-4,761,279 (Eastman Kodak) describes shaving cream formulations comprising salts of acyl lactylates, saturated monoglycerides, propyleneglycol mono esters and humectants.

US-A-4,946,832 (RITA Corporation) describes cosmetic base compositions comprising 1 to 15% by weight sucrose fatty acid ester, 3 to 45% by weight acyl lactylate or its alkali metal salts and solvent. The compositions promote wound healing and reduces skin dryness. Foaming properties of the compositions are not reported.

Applicants in their search for mild cleansing compositions, in particular for cleansing human skin or hair, with the added attribute that full lather is produced, have unexpectedly discovered that a narrow range of acyl lactylates in combination with specific co-surfactants provide the desired effects when used in particular amounts. The compositions so obtained are capable of producing a superior lather and accordingly have great consumer appeal. Also, the compositions are so mild that they can safely be used for cleansing the skin and the hair and other more delicate skin areas.

DEFINITION OF THE INVENTION

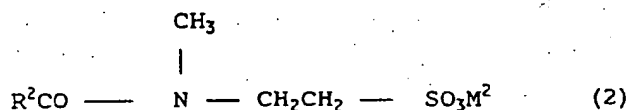
Accordingly, the invention provides a cleansing composition which comprises, in addition to water, (a) from 10 to 35% by weight of one or more acyl lactylate(s) of the following structure (1)



where R¹CO represents a C₆ to C₁₆ acyl radical; a is an integer from 1 to 3; M¹ represents hydrogen or a counterion chosen from alkali metal, ammonium or a substituted ammonium group having one or more C₁ to C₃ alkyl or hydroxy alkyl group(s); and

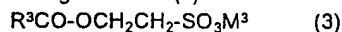
(b) from 5 to 25% by weight of one or more co-surfactant (s) chosen from the following compounds (A) to (O):

(A) N-methyl-N-acyl taurates of the following structure (2)



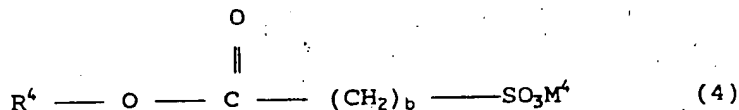
where R^2CO represents a C_{10} to C_{18} acyl group; and M^2 is as M^1 in structure (1);

(B) Acylisethionates of the following structure (3)



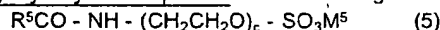
where R^3CO represents a C_{10} to C_{18} acyl group; and M^3 is as M^1 in structure (1);

(C) Alkylesters of ω -sulphonated carboxylic acids of the following structure (4)



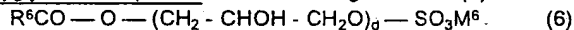
where R^4 represents a C_{10} to C_{18} alkyl group; M^4 is as M^1 in structure (1); and (b) is an integer from 1 to 3;

(D) Fatty acylamido polyoxyethylene sulphates of the following structure (5)



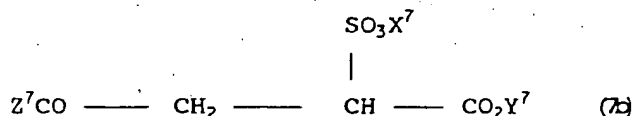
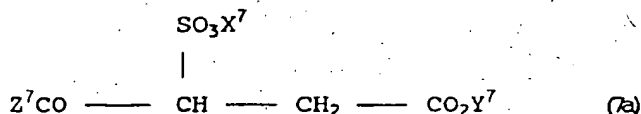
where R^5CO represents a C_{10} to C_{18} acyl group; M^5 is as M^1 in structure (1); and c is an integer from 1 to 10;

(E) Fatty acid polyglyceride sulphates of the following structure (6)



where R^6CO represents a C_{10} to C_{18} acyl group; M^6 is as M^1 in structure (1); and d is an integer from 1 to 4;

(F) Mono substituted sulposuccinates of the following structures (7a) or (7b)



where Z^7 is chosen from the following groups (i) to (iii):

(i) $\text{R}^a\text{CO} - \text{NH} - (\text{CH}_2\text{CH}_2\text{O})_e -$, where R^aCO represents a C_{10} to C_{18} acyl group; and e is an integer from 1 to 10;

(ii) $\text{R}^b - \text{O} - (\text{CH}_2\text{CH}_2\text{O})_f -$, where R^b represents a C_{10} to C_{18} alkyl group; and f is an integer from 1 to 10;

(iii) $\text{R}^c - \text{O} -$, where R^c represents a C_{10} to C_{18} alkyl group; and

X^7 and Y^7 are independently from each other chosen from the counterions represented by M^1 in structure (1);

(G) Mono substituted phosphates of the following structure (8)



where R⁸ represents a C₁₀ to C₁₈ alkyl group; M^{8a} and M^{8b} are independently from each other chosen from the group of species represented by M¹ in structure (1); and g is an integer from 0 to 3;

(H) Alkyl poly(ethylene glycol) acetates of the following structure (9)



where R⁹ represents a C₁₀ to C₁₈ alkyl group; M⁹ is as M¹ in structure (1); and h is an integer from 1 to 10;

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where R¹⁰CO represents a C₁₀ to C₁₈ acyl group; Z¹⁰ represents H or C₁ to C₂ alkyl; Y¹⁰ represents H, C₁ to C₃ alkyl or C₁ to C₃ alkyl substituted with a COOH group; and M¹⁰ is chosen from the counterions represented by M¹ in structure (1);

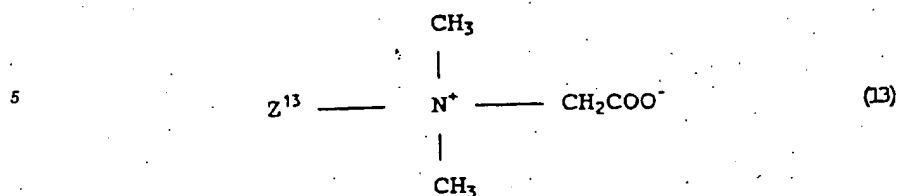
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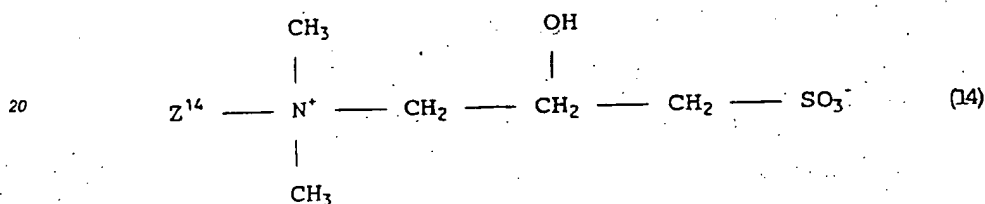


where Z^{13} represents

(i) a C_{10} to C_{18} alkyl group; or

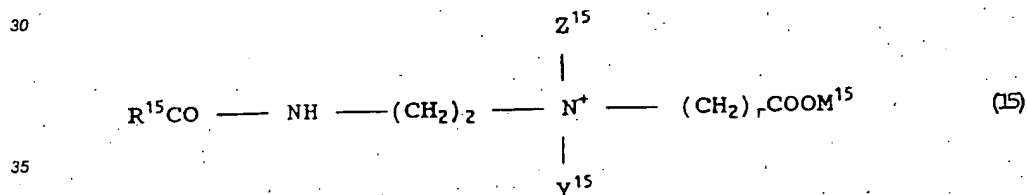
(ii) a $\text{R}^{13}\text{CO} - \text{NH} - (\text{CH}_2)_3$ group, where R^{13}CO represents a C_{10} to C_{18} acyl group;

(N) Sultaines of the following structure (14)



where Z^{14} represents a C_{10} to C_{18} alkyl group or a C_{10} to C_{18} acyl amido group;

(O) Alkyl amphocarboxylates of the following structure (15)



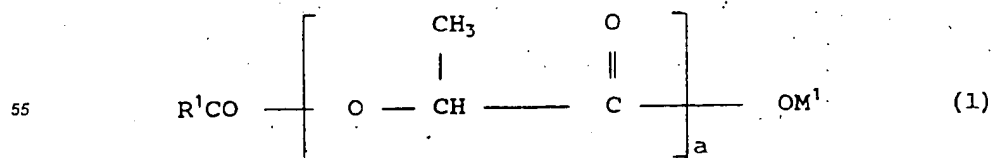
where R^{15}CO represents a C_{10} to C_{18} acyl group; Z^{15} and Y^{15} are independently from each other chosen from H, $\text{CH}_2\text{CH}_2\text{OH}$ or $(\text{CH}_2)_r\text{COO}^-$; r is 1 or 2; and M^{15} is as M^1 in structure (1);

the composition having a foam height of more than 130mm, as measured by the foam height test described herein.

DISCLOSURE OF THE INVENTION

The Acyl lactylate

The composition according to the invention comprises from 10 to 35% by weight of one or more acyl lactylate(s) of the following structure (1)



where R¹CO represents a C₈ to C₁₈ acyl radical; a is an integer from 1 to 3; M¹ represents hydrogen or a counterion chosen from alkali metal, ammonium or substituted ammonium group having one or more C₁ to C₃ alkyl or hydroxy alkyl group(s).

Examples of acyl lactylates having the above structure (1) include:

- Sodium lauroyl monolactylate
- Sodium myristoyl monolactylate
- Sodium decanoyl monolactylate
- Potassium dodecanoyl monolactylate
- Potassium dodecanoyl dilactylate
- Sodium myristoyl dilactylate
- Sodium lauroyl dilactylate
- Lauroyl dilactylic acid
- Palmitoyl dilactylic acid
- Triethanolammonium dodecanoyl monolactylate
- ammonium decanoyl monolactylate, and
- Triethanolammonium decanoyl monolactylate.

The preferred acyl group R¹CO is a C₁₀ to C₁₄ acyl group.

Preferred examples for M¹ include sodium, potassium, ammonium and triethanolammonium.

The amount of the acyl lactylate present in the composition according to the invention is preferably from 15 to 30%, most preferred from 20 to 30% by weight of the composition.

The Co-surfactant

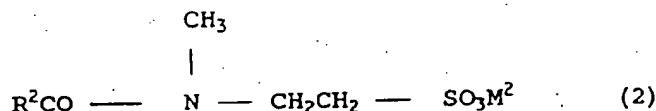
The composition according to the invention further comprises one or more co-surfactant(s) in an amount from 5 to 25% by weight of the composition. The co-surfactant is chosen from the compounds (A) to (O) described hereinafter.

The preferred amount of the co-surfactant present in the composition is from 10 to 25% by weight.

The co-surfactants useful in the present invention are not only very mild but also result in high foaming compositions when combined with the acyl lactylate in the specified amounts.

The following compounds are suitable as co-surfactant in the cleansing composition according to the invention.

(A) N-methyl-N-acyl taurates, having the following structure (2)

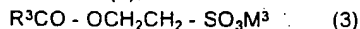


where R²CO represents a C₁₀ to C₁₈ acyl group; and M² is as M¹ in structure (1).

Preferred examples for taurates having the structure (2) include:

- Sodium N-methyl-N-cocoyl taurate, eg. available as Diapon K from Nippon Oil and Fats,
- Sodium N-methyl-N-lauroyl taurate, eg. available as Diapon LM from Nippon Oils and Fats,
- Sodium N-methyl-N-myristoyl taurate, eg. available as Nikkol MMT from Nikkol Chemicals.

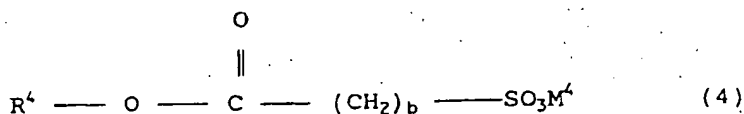
(B) Acylisethionates, having the structure (3);



where R³CO represents a C₁₀ to C₁₈ acyl group; and M³ is as M¹ in structure (1).

The preferred example for an Acylisethionate having the structure (3) is sodium cocoyl isethionate, eg. available as Fenopon AC 78 from Rhone Poulenc.

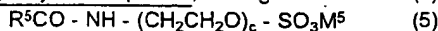
(C) Alkylesters of ω-sulphonated carboxylic acids, having the structure (4);



where R^4 represents a C_{10} to C_{18} alkyl group; M^4 is as M^1 in structure (1); and (b) is an integer from 1 to 3.

The preferred example for an Alkylester of a ω -sulphonated carboxylic acid having the structure (4) is sodium lauryl sulphoacetate, eg. available as Lathanol LAL from Stepan or as Nikkol LSA and Nikkol Chemicals.

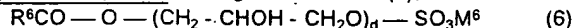
(D) Fatty acylamido polyoxyethylene sulphates, having the structure (5);



where R^5CO represents a C_{10} to C_{18} acyl group; M^5 is as M^1 in structure (1); and c is an integer from 1 to 10.

The preferred example for a sulphate having the structure (5) is sodium cocoyl amide EO-3 sulphate, eg. available as Sunamide C-3 from Nippon Oils & Fats.

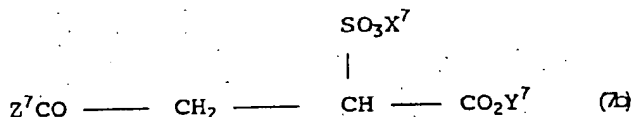
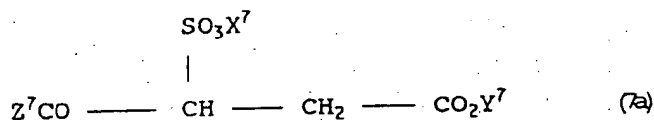
(E) Fatty acyl polyglyceride sulphates, having the structure (6);



where R^6CO represents a C_{10} to C_{18} acyl group; M^6 is as M^1 in structure (1); and d is an integer from 1 to 4;

A preferred example for a fatty acyl poly(glyceride) sulphate having the structure (6) is sodium cocoyl monoglyceride sulphate, available from Jan Dekker International.

(F) Mono substituted sulphosuccinates, having the structures (7a) or (7b);



where Z^7 is chosen from the following groups (i) to (iii):

(i) $R^aCO - NH - (CH_2CH_2O)_e -$, where R^aCO represents a C_{10} to C_{18} acyl group; and e is an integer from 1 to 10;

(ii) $R^b - O - (CH_2CH_2O)_f -$, where R^b represents a C_{10} to C_{18} alkyl group; and f is an integer from 1 to 10;

(iii) $R^c - O -$, where R^c represents a C_{10} to C_{18} alkyl group; and

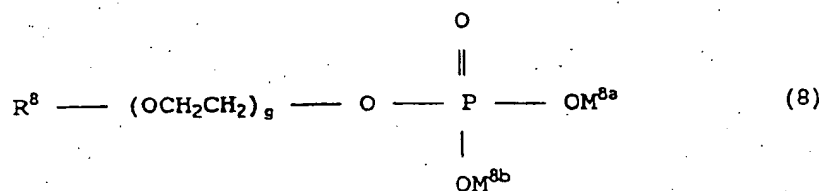
X^7 and Y^7 are independently from each other chosen from the counterions represented by M^1 in structure (1).

Preferred examples for mono substituted sulphosuccinates represented by the structures (7a) and (7b) include:

- Disodium lauroyl amido (EO)-2 to 3 sulphosuccinate eg. available as Beaulight A-5000 from Sanyo Chemicals,
- a mixture of Disodium lauryl (PEG)-2 sulphosuccinate and Disodium myristyl (PEG)-2 sulphosuccinate, eg. available as Beaulight ESS from Sanyo Chemicals,
- Disodium lauryl (PEG)-2 to 3 sulphosuccinate, eg. available as Rewopol SBFA 30 from Rewo, and
- Disodium lauryl sulphosuccinate, eg. available as Beaulight SSS from Sanyo Chemicals.

The short form (EO)-2 to 3 denotes that, as an average value, 2 to 3 oxyethylene groups are present per molecule sulphosuccinate. On the other hand, the short form (PEG)-2 to 3 stands for the presence of a polyethylene glycol group derived from, as an average value, 2 to 3 ethylene glycol molecules per molecule sulphosuccinate.

(G) Mono substituted phosphates, having the structure (8),

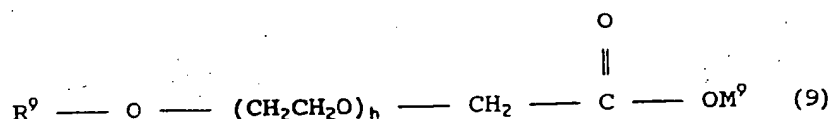


where R^8 represents a C_{10} to C_{18} alkyl group; M^{8a} and M^{8b} are independently from each other chosen from the group of species represented by M^1 in structure (1); and g is an integer from 0 to 3.

Preferred examples for Mono substituted phosphates having the structure (8) include:

- Monosodium monolauryl phosphate, eg. available as Phosten HLP from Nikkol Chemicals,
- Monosodium monolauryl (EO)-1 phosphate, eg. available as Phosten HLP-1 from Nikkol Chemicals,
- and
- Monosodium monolauryl (EO)-2 to 3 phosphate, eg. available as Phosphanol ML 220 from Toho Chemicals.

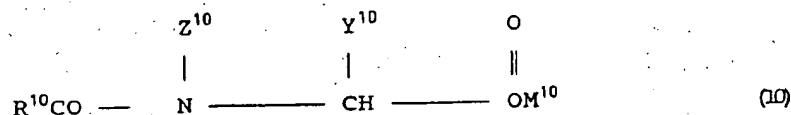
(H) Alkyl poly(ethylene glycol) acetate, having the structure (9),



where R^9 represents a C_{10} to C_{18} alkyl group; M^9 is as M^1 in structure (1); and h is an integer from 1 to 10.

Preferred examples for Alkyl (PEG) acetates having the structure (9) include, Sodium Cocoyl PEG-10 acetate, eg. available as Marlinat CM 105 from Huls, and Sodium tridecyl (PEG)-3 acetate, eg. available as Beaulight ECA from Sanyo Chemicals.

(I) Salts of N-acyl α -amino acids, having the structure (10);

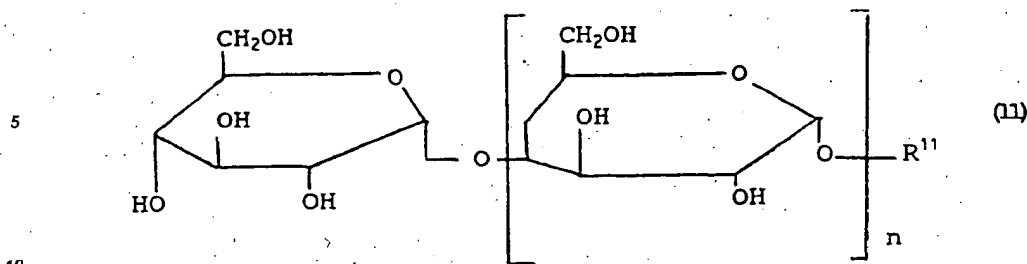


where R^{10}CO represents a C_{10} to C_{18} acyl group; Z^{10} represents H or C_1 to C_2 alkyl; Y^{10} represents H, C_1 to C_3 alkyl or C_1 to C_3 alkyl substituted with a COOH group; and M^{10} is chosen from the counterions represented by M^1 in structure (1).

Preferred examples for salts of N-acyl α -amino acids having the structure (10) include:

- Sodium N-lauroyl glutamate, available as Amisoft, LS-11 from Ajinomoto Inc.,
- Sodium N-cocoyl glutamate, eg. available as Amisoft CS-11 from Ajinomoto Inc.,
- Triethanolammonium N-cocoyl sarcosinate, eg. available as Fiset KT from Nippon Oil and Fats,
- Sodium N-decanoyl sarcosinate,
- Sodium N-lauroyl alaninate, eg. available as Alaninate LN-30 from Nikkol Chemicals,
- Sodium N-cocoyl alaninate,
- Sodium N-cocoyl aspartate, and
- Sodium N-lauroyl aspartate.

(K) Alkyl poly glucoside, having the structure (11);

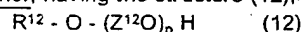


where R^{11} represents a C_{10} to C_{14} alkyl group; and n is an integer from 1 to 3.

Preferred examples for Alkyl poly glucosides having the structure (11) include;

- Decyl poly glucoside ($n = 1.44$), eg. available as Oramix NS10 from Seppic, and
- C_9 - C_{11} Alkyl poly glucoside ($n = 1.4$), eg. available as APG 300 from Henkel.

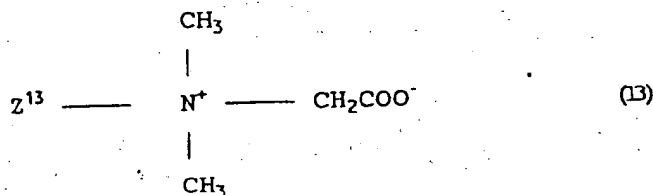
(L) Poly(oxyalkylene) fatty alkyl ether, having the structure (12).



where R^{12} represents a C_6 to C_{18} alkyl group; Z^{12} is a C_2 or C_3 alkylene group; and p is an integer from 1 to 10.

Preferred examples for a poly(oxyalkylene)-fatty alkyl ether having the structure (12) are (PEG)-6 lauryl ether and (PEG)-6 myristyl ether. A mixture of (PEG)-6 C_{12} - C_{15} is available as Dobanol 91-6 from Shell Chemicals.

(M) N-substituted Betaines, having the structure (13):



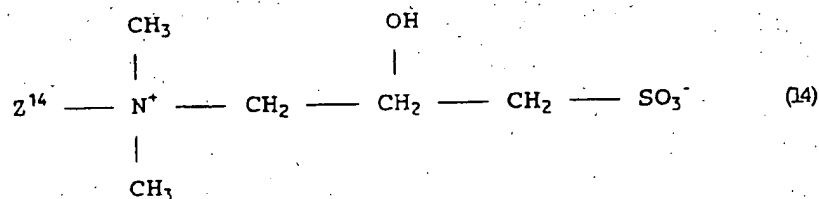
where Z^{13} represents

- (i) a C_{10} to C_{18} alkyl group; or
- (ii) a $R^{13}CO - NH - (CH_2)_3$ group, where $R^{13}CO$ represents a C_{10} to C_{18} acyl group.

Preferred examples for N-substituted Betaines having the structure (13) include:

- Lauryl dimethyl betaine, eg. available as Empigen BB from Albright & Wilson, and
- Cocoamidopropyl betaine, eg. available as Tegobetaine L7F from Goldschmidt.

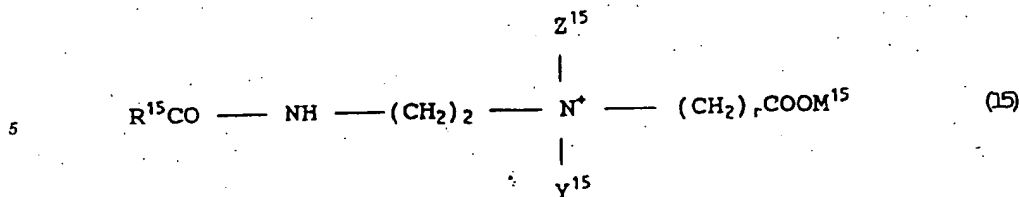
(N) Sultaines, having the structure (14);



where Z^{14} represents a C_{10} to C_{18} alkyl group or a C_{10} to C_{18} acyl amido group.

A preferred example for a Sultaine having the structure (14) is Cocoamidopropyl hydroxysultaine, eg. available as Cycloteric BET-CS from Alcolac.

(O) Alkylamphocarboxylates, having the structure (15);



where R^{15}CO represents a C_{10} to C_{18} acyl group; Z^{15} and Y^{15} are independently from each other chosen from H, $\text{CH}_2\text{CH}_2\text{OH}$ or $(\text{CH}_2)_r\text{COO}^-$; r is 1 or 2; and M^{15} is as M^1 in structure (1).

Preferred examples for Alkylamphocarboxylates having the structure (15) include:

- Cocoamphoglycinate eg. available from GAF,
- Wheatgerm amphodiglycinate,
- Cocamphodipropionate, eg. available as Mirataine C2MS from Rhone Poulenc,
- Caprylamphodipropionate, eg. available as Miranol S2MSF from Rhone Poulenc,
- Cocoamphoacetate, eg. available as Nissan Anon GLM-R from Nippon Oils & Fats.

Water

The cleansing composition according to the invention also comprises water. The water will normally be present in an amount of up to 85%, preferably from 10 to 85% by weight of the composition.

Optional Ingredients

The cleansing composition according to the invention can also comprise optional ingredients to modify the physical or chemical characteristics of the composition, eg. product form, foaming properties, pH-value or shelf life.

Examples for ingredients which can be included in the compositions according to the invention are:

Emollients, such as:

- [PEG]-20 Corn Glycerides,
- [PEG]-60 Corn Glycerides,
- [PEG]-20 Almond Glycerides,
- [PEG]-60 Almond Glycerides,
- [PEG]-12 Palm Kernel Glycerides,
- [PEG]-45 Palm Kernel Glycerides,
- [PEG]-20 Evening primrose Glycerides,
- [PEG]-60 Evening Primrose Glycerides,
- Ethoxylated (EO)-20 methyl glucoside, also referred to as Methyl gluceth-20
- Propoxylated (EO)-10 methyl glucoside.

A group of preferred emollients are poly (oxyalkylene) glycerides mono-substituted with a C_{10} to C_{18} alkyl group and having up to 20 C_2 to C_3 oxyalkylene moieties per molecule of the glyceride, as an average value.

Especially preferred emollients are Polyoxyalkylene methyl glucosides having, as an average value, up to 20 C_2 - C_3 oxyalkylene moieties per molecule glucoside. These emollients are very beneficial as they impart a soft feeling to the skin and support the ability of the skin to retain moisture. Examples for such Polyoxyalkylene methyl glucosides are available as Glucam E-20 and Glucam P10, respectively, from Amerchol.

Humectants, such as glycerine, sorbitol, sodium 2-pyrrolidone-5-carboxylate, soluble collagen, gelatine, ethoxylated (EO)-20 methyl glucoside, and propoxylated (EO)-10 methyl glucoside.

Preservatives, such as ethanol, benzoic acid, sodium benzoate, sorbic acid, alkali metal halides;

pH controlling agents, such as Sodium hydroxide, Citric acid, Triethanolamine, Potassium hydroxide, Ammono Sorbitol. The pH controlling agents are preferably present in an amount sufficient to adjust the composition to a pH value in the range of 5.5 to 8.5.

Propellants, such as fluorochloro hydrocarbons, propane, butane, isobutane, dimethyl ether, carbon dioxide, nitrous oxide;

Foam modifying agents, such as cationic polymers, especially quaternised ammonium hydroxy ethyl cellulose polymers, eg. available as polyquaternium-24 or polyquaternium-10. These polymers make the foam creamier and richer.

Further Optional Ingredients

The composition according to the invention can also contain other optional agents, that is ingredients other than the main ingredients already defined which are conventionally employed in cleansing compositions, such as thickeners.

USE OF THE COMPOSITION

The cleansing composition according to the invention is primarily intended as a personal washing product for cleansing the face. It can also be used for washing the hair as well as the whole body. The composition according to the invention is preferably used as facial cleanser, facial wash foam, hair shampoo, body shampoo, bath foam or shaving cream. Due to the high detergency provided by the composition it is also possible to use it in non-cosmetic applications, such as a household cleanser, carpet cleanser or detergent for tableware.

The following procedure is an example for the use of the cleansing composition according to the invention; a small quantity, for example from 1 to 5ml, of the composition is either rubbed between the hands, together with water together to form a foam which is then used for washing or applied via a sponge to the area to be cleansed, or the foam is generated directly on that area. The foam is subsequently rinsed away with clean water.

The cleansing composition according to the invention can take the form of a liquid or gel, intended to be dispensed from a capped container such as a bottle, roll-on applicator or tube, or a pump-operated or propellant-driven aerosol dispenser. The composition can also take the form of a solid, such as a stick or a bar or tablet intended to be used for washing instead of a conventional soap bar.

Foaming Properties of the Composition

Although the composition according to the invention does not include harsh surfactants, as are found in conventional cleansing compositions, its foaming power is excellent. This is shown by the foam-heights measured by the Foam-Height Test described hereinafter.

Foam-Height Test

The test-method which has been used to assess the foaming power of the cleansing compositions according to the invention is the ASTM D 1173-53 test, also referred to as Ross-Miles test, and described in J Ross and G D Miles, American Society for Testing Materials, 1953, pages 644-646. The test has been carried out at a temperature of 20°C by using an aqueous test solution of 0.3% by weight acyl lactylate and 0.1% by weight co-surfactant. This is a realistic concentration of the cleansing composition according to the invention when used by the consumer, eg. when topically applied on the face or body together with water to generate the desired foam. The pH value of the test solution has been adjusted to a pH of 7.5 by addition of aqueous sodium hydroxide solution.

The following Table I shows the foam heights obtained by using various cleansing compositions according to the invention. In any case the acyl lactylate was a mixture of 70% by weight sodium lauroyl lactylate and 30% by weight myristoyl lactylate. This mixture is available under the trade name Patonic 138C from RITA Patterson. The foam height measured for this mixture without added co-surfactant is quoted as experiment (27).

Table I

	<u>Co-surfactant</u>	<u>Foam-height (mm)</u>
5	(1) Sodium N-methyl-N-cocoyl taurate	193
	(2) Sodium N-methyl-N-lauroyl taurate	198
	(3) Sodium N-methyl-N-myristoyl taurate	193
10	(4) Triethanolammonium N-cocoyl sarcosinate	210
	(5) Sodium N-cocoyl glutamate	165
	(6) Sodium cocoyl isethionate	185
15	(7) Sodium mono lauryl phosphate	180
	(8) Sodium mono lauryl [EO]-1 phosphate	160
	(9) Sodium mono lauryl [EO]-2 to 3 phosphate	190
20	(10) Sodium cocoyl [PEG]-10 acetate	180
	(11) Sodium tridecyl [PEG]-3 acetate	155
25	(12) Sodium N-lauroyl alaninate	172
	(13) Sodium lauryl sulphoacetate	194
	(14) Sodium cocoyl amido [EO]-3 sulphate	190
30	(15) Disodium lauroyl amido [EO]-2 to 3 sulphosuccinate	148
	(16) Disodium lauryl sulphosuccinate	175
35	(17) Disodium lauryl [PEG]-2 to 3 sulphosuccinate	170
	(18) Mixture of Disodium lauryl/myristyl [PEG]-2 sulphosuccinate	180
40	(19) Sodium cocoyl mono glyceride sulphate	158
	(20) Decyl polyglucoside ($n^* = 1.44$)	170
	(21) C_9 - C_{11} Alkyl polyglucoside ($n^* = 1.4$)	172
45	(22) [PEG]-6 C_{12} - C_{15} fatty alkyl ether	168
	(23) N-lauryl dimethyl betaine	180
	(24) Cocoamidopropyl betaine	170
	(25) Cocoamphodipropionate	165
50	(26) Cocoamphoacetate	173
	(27) -	125
	n^* - degree of polymerisation, cf. structure (11)	

It can be seen from experiment (27) that all the co-surfactants used in experiments (1)-(26) enhance the foam height of the acyl lactylate mixture Patonic 138C to some degree. In particular, taurates having the structure (2), sarcosinates having the structure (10), sulphosuccinates having the structures (7a) or (7b) and ise-

thionates having the structure (3) are capable of increasing the foam height drastically.

The components of the composition and their amounts are chosen in such a manner that the cleansing composition according to the invention has a foam height of more than 130mm, as measured by the foam height test carried out under the conditions described above.

5 Preferably the compositions according to the invention have a foam height of more than 150mm, more preferred more than 170mm and most preferred more than 190mm.

The superiority of the compositions according to the invention as compared to conventional products is shown by the foam heights stated in the following Table II for facial wash foams based on conventional surfactant systems. Again the Ross-Miles test under the above defined conditions was carried out to assess the
10 respective foam heights. The test solutions were aqueous solutions containing the conventional product at a concentration of 1.0% by weight. The percentages given below for the ingredients of the surfactant systems are based on the weight of the respective product.

Table II

15	Surfactant-System	Foam Height (mm)
	(1) 14% cocoyl isethionate	99
	(2) 37% mixture of C ₁₈ /C ₁₆ /C ₁₄ /C ₁₂ potassium soaps	76
20	(3) 36% mixture of C ₁₄ /C ₁₂ triethanolammonium soaps	52
	(4) 19% Fatty acyl glutamate, 2% Fatty acyl sarcosinate, 4% C ₁₄ /C ₁₂ potassium soap,	70
25	(5) 10% nonionic surfactant, 4% ether sulphate, 1.6% Fatty acyl sarcosinate	114
30	(6) 30% C ₁₈ /C ₁₄ /C ₁₂ potassium soaps 5% Sodium lauroyl glutamate	54
35	(7) 10% Sodium lauryl ethersulphate 4% Cocamidopropyl betaine	128

40 The above data clearly show that the compositions according to the invention give a much higher foam height than cleansing compositions based on conventional surfactant systems.

Although the cleansing compositions according to the invention comprise high amounts of acyl lactylate, namely from 10 to 30% by weight an excellent foaming power is achieved, as is shown by the data in Table I. This is clearly in contrast to the teaching of the prior art as disclosed in EP-A-224 796 (Kao) that only amounts
45 of less than 5% by weight of acyl lactylate should be included in surfactant systems to obtain mild and high foaming cleansing compositions.

The data given in Table III below show the greater foaming power obtainable by compositions embodying the present invention compared to the prior art described in EP-A-224796. Examples (i) to (viii) in table III contain the same lactylates in the same amounts as corresponding Examples 2 to 9 in Table 7-1 of EP-A-224796.
50 In each of cases (i) to (viii) a 7:3 mixture of triethanolamine mono:di lauryl phosphate was present at a level of 15 wt%, triethanolamine was added to adjust the pH to 7.5 and demineralised water was used to 100 wt%. As shown in Table III in each case the lactylate content is less than 5wt% and the foam height, as measured by the Ross-Miles test described above, is less than 130mm.

Table III

	Lactylate present	Foam height (mm)
(i)	0.5wt% stearyl lactylate	100
(ii)	2.0wt% stearyl lactylate	100
(iii)	0.5wt% iso-stearyl lactylate	105
(iv)	2.0wt% iso-stearyl lactylate	100
(v)	0.5wt% lauroyl lactylate	105
(vi)	2.0wt% lauroyl lactylate	115
(vii)	0.5wt% myristoyl lactylate	105
(viii)	2.0wt% myristol lactylate	109

In contrast Table IV below gives the foaming power of compositions embodying the present invention. The foaming power was measured by the Ross Miles test described above. In each case the solutions were adjusted to pH 7.5 by addition of 20% aqueous solution of NaOH and were made up to 100% with demineralised water.

Table IV

	Surfactant System	Foam Height (mm)
(ix)	17wt% 1:1 Sodium C ₁₀ :C ₁₂ lactylate 2wt% Sodium N-myristoyl-N-methyl taurate	135
(x)	10wt% 7:3 Sodium C ₁₂ :C ₁₄ lactylate 5wt% Disodium lauryl/myristoyl sulphosuccinate	135
(xi)	15wt% 7:3 Sodium C ₁₂ :C ₁₄ lactylate 2wt% triethanolamine mono:di 7:3 lauryl phosphate	160
(xii)	17wt% 7:3 Sodium C ₁₂ :C ₁₄ lactylate 2wt% Decyl polyglucoside	150
(xiii)	17wt% 7:3 Sodium C ₁₂ :C ₁₄ lactylate 2wt% Sodium cocoyl isethionate	150

As can be seen from Table IV each surfactant system embodying the present invention had a foam height above 130mm.

The superiority of the cleansing compositions according to the invention to conventional compositions comprising less than 10% by weight of acyl lactylate is demonstrated by the data given in the following Table V.

The foam heights were again measured by the Ross-Miles Test conducted under the conditions as defined above.

All percentages given are based on the weight of the respective test solution. All test solutions were adjusted to a pH value of 7.5 by addition of aqueous NaOH solution.

Table V

	Test Solutions	Foam Height (mm)
5	(A) 5% lauroyl dilactylic acid	112
	5% Triethanolammonium laury sulphate	
	5% Coconut diethanolamide	
10	to 100% demineralised water	
	(B) 75% lauroyl dilactylic acid	119
	5% Triethanolammonium laury sulphate	
15	3% Coconut diethanolamide	
	to 100% demineralised water	
	(C) 9% lauroyl dilactylic acid	116
20	1% Triethanolammonium laury sulphate	
	1% Coconut diethanolamide	
	to 100% demineralised water	
25	(D) 9% lauroyl dilactylic acid	104
	3% Triethanolammonium laury sulphate	
	1% Coconut diethanolamide	
30	to 100% demineralised water	
	(E) 10% Sodium lauroyl/myristol lactylate (Pationic 138 C)	141
	4% Sodium cocoyl isethionate	
35	1% Cocoampho carboxy glycinate	
	to 100% demineralised water	
	(F) 12% Sodium lauroyl/myristol lactylate (Pationic 138 C)	136
40	1.5% Sodium N-lauroyl sarcosinate	
	1.5% Sodium N-methyl-N-cocoyl taurate	
	to 100% demineralised water	
45	(G) 15% Sodium lauroyl/myristol lactylate (Pationic 138 C)	136
	2% Sodium laurylamide [EO]-3 sulphate	
	to 100% demineralised water	

The above data show that, although the compositions according to the invention (E) to (G) are used in amounts of 10% by weight or more, they foam much better than the conventional compositions (A) to (D).

The following examples further illustrate the invention by giving conventionally prepared formulations for different types of cleansing compositions.

EXAMPLESExample 1 - Facial Cleanser

	wt %
Potassium dodecanoyl monolactylate	15.00
Potassium dodecanoyl dilactylate	15.00
Disodium lauryl sulphosuccinate	7.00
Glycerol (Humectant)	5.00
Sodium chloride (Thickener)	4.20
Methyl gluceth-20 (Humectant/Emollient)	3.00
Polyquaternium 10 (Foam modifier)	0.40
Ethyleneglycol monostearate (Thickener)	0.40
Preservative	0.30
Fragrance	0.30
Citric acid	to pH 7.0-7.5
Distilled water	to 100.00
Foam height = 153 mm	

Example 2 - Mild Facial Cleanser

	wt %
Sodium myristoyl dilactylate	20.00
Sorbitol (Humectant)	9.00
Sodium cocoyl isethionate	7.00
Cocoamidopropyl hydroxysulphobetaine	4.00
Polyoxyethylene [EO]-20 sorbitan monolaurate (Thickener)	3.00
Hydroxypropyl methylcellulose (Thickener)	0.20
Preservative	0.20
Fragrance	0.10
Citric acid	to pH 6.0-6.5
Distilled water	to 100.00
Foam height = 162mm	

Example 3 - Facial Cleanser for Dry Skin

	wt %
5 Sodium lauroyl dilactylate	25.00
Sodium monolauryl phosphate	10.00
Propylene glycol	10.00
10 Polyethyleneglycol (PEG)-150 distearate	5.00
Preservative	0.25
Fragrance	0.20
15 Citric acid	to pH 6.5-7.0
Distilled water	to 100.00
Foam height = 139 mm	

Example 4 - Mild Facial Cleanser for Sensitive Skin

	wt %
25 Lauroyl dilactylic acid	20.0
Sodium N-methyl-N-myristol taurate	6.00
Cocoamphoacetate	3.50
30 Glycerol (Humectant)	9.00
Diglycerol (Humectant)	1.00
PEG-20 almond glycerides (Emollient)	5.00
35 Polyquaternium 24 (Thickener, Foam Modifier)	0.40
Sodium Hydroxide (aq. Soln.)	to pH 6.0-6.5
Distilled water	to 100.00
40 Foam height = 150 mm	

Example 5 - Liquid Hand Soap

	wt %
45 Lauroyl dilactylic acid	7.50
Palmitoyl dilactylic acid	7.50
50 Triethanolammonium N-lauroyl glutamate	9.00
Cocoamidopropyl betaine	4.00
Propyleneglycol hydroxy isostearate (Thickener)	1.00
55 Trisodium citrate (Thickener)	7.00
Preservative	0.26
Fragrance	0.15

Triethanolamine
 Distilled water
 Foam height = 144mm

to pH 7.0-7.3
 to 100.00

Example 6 - Anti-Acne Facial Cleansing Scrub Gel

	wt %
Sodium decanoyl monolactylate	18.00
Sodium N-cocoyl sarcosinate	6.00
Benzoyl peroxide (70% aq.soln.)	14.30
Polyoxyethylene (PEG)-20 cetyl ether (Thickener, Emulsifier)	10.00
Magnesium aluminium silicate (Thickener)	1.00
Disodium ethylenediamine tetraacetate (Chelating Agent)	0.20
Sodium hydroxide	to pH 7.0-7.5
Distilled water	to 100.00
Foam height = 135 mm	

Example 7 - Hair Shampoo

	wt %
Triethanolammonium dodecanoyl monolactylate	21.00
Sodium lauryl (PEG)-10 acetate	4.00
Cocoamphodipropionate	3.00
Propylene glycol (Humectant)	2.50
Sodium chloride (Thickener)	1.20
Preservative	0.20
Fragrance	0.20
Citric acid	to pH 6.0-6.5
Distilled water	to 100.00
Foam height = 158 mm	

Example 8 - Mild Hair Shampoo

	wt %
Potassium myristoyl dilactylate	15.00
Lauryl ethoxylated (EO)-2.5 phosphoric acid	8.00
Sodium pyrrolidone carboxylate (50% aq.soln.)	1.00
(Humectant)	
Sodium chloride (Thickener)	3.00
Fragrance	0.24
Preservative	0.10
Potassium hydroxide (aq.soln.)	to pH 6.0-6.5
Distilled water	to 100.00
Foam height = 141mm	

Example 9 - Conditioning Shampoo

	wt %
Potassium lauroyl monolactylate	11.00
Sodium lauroylamide polyoxyethylene (EO)-3 sulphate	4.50
Lauryldimethyl betaine	4.00
Potassium chloride (Thickener)	2.50
Dimethicone copolyol (Conditioning agent)	0.50
Preservative	0.17
Fragrance	0.11
Dye	0.02
Citric acid	to pH 6.5-7.0
Distilled water	to 100.00
Foam height = 170 mm	

Example 10 - Antidandruff Shampoo

		wt %
5	Ammonium decanoyl monolactylate	14.00
	Ammonium decanoyl dilactylate	4.00
	Ammonium lauryl sulfoacetate	5.00
10	Zinc Pyrithione (48% aq.soln.) (Anti-fungal agent)	2.10
	Hydroxypropyl methylcellulose	1.25
	Magnesium aluminium silicate (Thickener)	1.00
15	Preservative	0.36
	Fragrance	0.20
	Dye	0.03
20	Citric acid	to pH 7.0-7.3
	Distilled water	to 100.00
	Foam height = 150 mm	

Example 11 - Body Shampoo

		wt %
30	Dodecanoyl dilactylic acid	13.00
	Sodium N-cocoyl alaninate	4.00
	Lauroamphoglycinate	4.00
35	(PEG)-80 sorbitan laurate (Thickener)	3.30
	Disodium ethylenediamine tetraacetate	0.20
	Preservative	0.10
40	Fragrance	0.05
	Dye	0.01
	Citric acid	to pH 7.0-7.5
45	Distilled water	to 100.00
	Foam height = 164 mm	

Example 12 - Mild Body Shampoo

		wt %
5	Triethanolammonium lauroyl monolactylate	7.50
	Triethanolammonium myristol monolactylate	7.50
	Disodium lauryl (PEG)-2.5 sulphosuccinate	10.00
10	Cocoamidopropyl betaine	5.00
	Glycerol	5.00
	Polyoxyethylene (PEG)-45 monostearate (Thickener)	2.00
15	Preservative	0.35
	Fragrance	0.35
	Citric acid	to pH 7.0-7.5
20	Distilled water	to 100.00
	Foam height = 165 mm	

25 Example 13 - Liquid Body Shampoo

		wt %
30	Potassium decanoyl monolactylate	10.00
	Potassium decanoyl dilactylate	10.00
	Decyl polyglucoside (n=1.44)	5.00
	Glycerol	5.00
35	Trisodium citrate dihydrate (Thickener)	1.50
	Sodium carboxymethyl cellulose (Thickener)	1.00
	Citric acid	to pH 7.0-7.5
40	Distilled water	to 100.00
	Foam height = 138mm	

Example 14 - Aerosol Body Shampoo

	wt %
Sodium decanoyl monolactylate	10.00
Sodium decanoyl dilactylate	10.00
Decyl polyglucoside (n=1.44)	5.50
Glycerol	2.00
Trisodium citrate dihydrate	1.50
Sodium carboxymethyl cellulose	1.00
Preservative	0.35
Fragrance	0.35
Citric acid	to pH 7.0-7.5
Distilled water	to 100.00
Foam height = 140 mm	

95% by weight of the solution obtained by mixing the above ingredients was combined with 5% by weight propellant and then sealed into a container.

Example 15 - Bath Foam Concentrate

	wt %
Lauroyl monolactylic acid	15.00
Lauroyl dilactylic acid	10.00
Cocoamphopropionate	5.00
Sorbitol	9.00
Sodium chloride	6.00
Sodium carboxymethyl cellulose (Thickener)	1.00
Preservative	0.30
Fragrance	0.60
Chamomile distillate (Anti-inflammatory agent)	1.00
Aminosorbitol	to pH 7.0-7.5
Distilled water	to 100.00
Foam height = 165 mm	

Example 16 - Mild Bath Foam

wt %

	Sodium myristoyl monolactylate	18.00
	Sodium myristoyl dilactylate	6.00
5	Sodium lauroyl monoglyceride sulphate	5.00
	Cocoamidopropyl hydroxysulphobetaine	4.00
	Preservative	0.20
	Fragrance	1.00
10	Citric acid	to pH 7.2-7.7
	Distilled water	to 100.00
	Foam height = 149mm	

15 Example 17 - Conditioning Bubble Bath

		wt %
20	Triethanolammonium decanoyl monolactylate	20.00
	Cocoamphodiacetate	5.00
	Polyoxyethylene (PEG)-20 cetyl ether	4.00
25	Polyoxyethylene (PEG)-50 stearyl ether	4.00
	Lauryl methyl gluceth-10 hydroxypropyl diammonium chloride (Conditioner)	0.50
	Polyquaternium 24 (Thickener)	0.40
30	Citric acid	to pH 7.0-7.5
	Distilled water	to 100.00
	Foam height = 151 mm	

Example 18 - Cleansing Bar

	wt %
Sodium lauroyl dilactylate	20.00
Sodium myristol dilactylate	15.00
Sodium N-cocoyl glutamate	15.00
Sodium N-stearoyl aspartate	10.00
Glycerol	8.00
Diglycerol	8.00
Preservative	0.30
Fragrance	0.60
Pigment	0.10
Distilled water	to 100.00%
Foam height = 175mm	

Example 19 - Facial Wash Foam

	wt %
Sodium lauroyl lactylate	14.00
Sodium myristol lactylate	6.00
Sodium lauryl ethoxy phosphate	6.00
Disodium lauroyl amido ethoxy sulphosuccinate	2.00
Disodium wheatgerm amido PEG-2 sulphosuccinate	2.00
Polyquaternium-24	0.40
Glycerol (humectant)	10.00
(PEGs)-12 palm kernel glycerides (emollient)	5.00
Sodium hydroxyde solution	to pH 6.8-7.0
Distilled water	to 100.00%
Foam height = 190 mm	

Example 20 - Facial Wash Foam

	wt %
5 Sodium lauroyl lactylate	14.00
Sodium myristol lactylate	6.00
Sodium cocoyl isethionate	6.00
10 Wheatgerm amphodiacetate	2.00
Cocoamphocarboxy glycinate	2.00
Polyquaternium-24	0.40
15 Glycerol (humectant)	10.00
(PEG)-40 almond glycerides (emollient)	5.00
Sodium hydroxide solution	to pH 6.8-7.0
20 Distilled water	to 100.00%
Foam height = 180 mm	

25 Example 21 - Facial wash foam

	wt %
30 Sodium lauroyl lactylate	14.00
Sodium myristoyl lactylate	6.00
Sodium cocoyl isethionate	6.75
Monolauryl phosphoric acid	2.40
35 Dilauryl phosphoric acid	0.60
Triethanolammonium N-cocoyl sarcosinate	1.00
Glycerol	10.00
40 Polyquaternium 10	0.40
Sodium hydroxide solution	to pH 6.8-7.0
Distilled water	to 100.00%
45 Foam height = 185mm	

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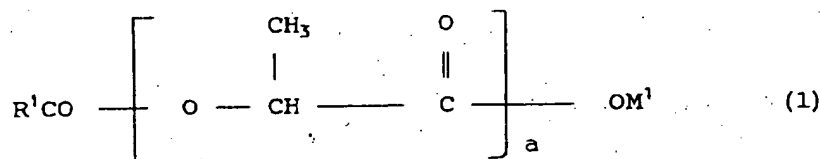
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Example 22 - Facial wash foam

	wt %
Sodium lauroyl lactylate	14.00
Sodium myristol lactylate	6.00
Sodium cocoyl isethionate	6.00
Sodium N-methyl-N-cocoyl taurate	3.00
Sodium N-cocoyl sarcosinate	1.00
Glycerol	10.00
Polyquaternium 10	0.40
Sodium hydroxide solution	to pH 6.8-7.0
Distilled water	to 100.00%
Foam height = 190 mm	

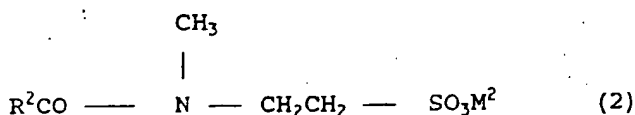
Claims

1. A cleansing composition which comprises, in addition to water,
 (a) from 10 to 35% by weight of one or more acyl lactylate (s) of the following structure (1)



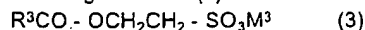
where R^1CO represents a C_6 to C_{16} acyl radical; a is an integer from 1 to 3; M^1 represents hydrogen or a counterion chosen from alkali metal, ammonium or a substituted ammonium group having one or more C_1 to C_3 alkyl or hydroxy alkyl group(s); and
 (b) from 5 to 25% by weight of one or more co-surfactant(s) chosen from the following compounds (A) to (C):

(A) N-methyl-N-acyl taurates of the following structure (2)



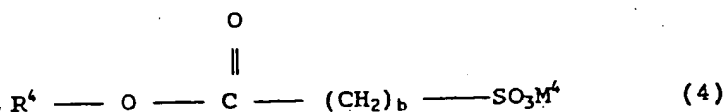
where R^2CO represents a C_{10} to C_{18} acyl group; and M^2 is as M^1 in structure (1);

(B) Acylisethionates of the following structure (3)



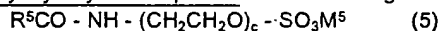
where R^3CO represents a C_{10} to C_{18} acyl group; and M^3 is as M^1 in structure (1);

(C) Alkylesters of ω -sulphonated carboxylic acids of the following structure (4)



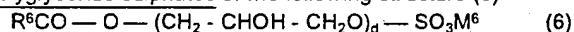
where R^4 represents a C_{10} to C_{18} alkyl group; M^4 is as M^1 in structure (1); and (b) is an integer from 1 to 3;

(D) Fatty acylamido polyoxyethylene sulphates of the following structure (5)



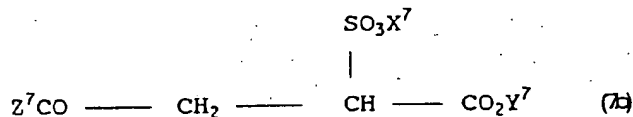
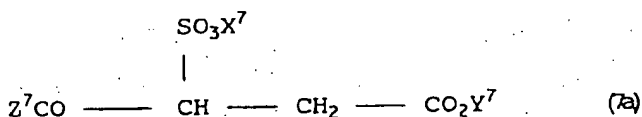
where R^5CO represents a C_{10} to C_{18} acyl group; M^5 is as M^1 in structure (1); and c is an integer from 1 to 10;

(E) Fatty acid polyglyceride sulphates of the following structure (6)



where R^6CO represents a C_{10} to C_{18} acyl group; M^6 is as M^1 in structure (1); and d is an integer from 1 to 4;

(F) Mono substituted sulposuccinates of the following structures (7a) or (7b)



where Z^7 is chosen from the following groups (i) to (iii):

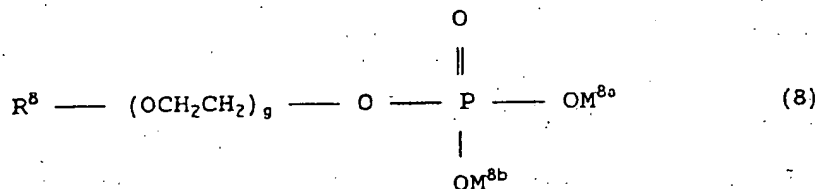
(i) $\text{R}^a\text{CO} - \text{NH} - (\text{CH}_2\text{CH}_2\text{O})_e -$, where R^aCO represents a C_{10} to C_{18} acyl group; and e is an integer from 1 to 10;

(ii) $\text{R}^b - \text{O} - (\text{CH}_2\text{CH}_2\text{O})_f -$, where R^b represents a C_{10} to C_{18} alkyl group; and f is an integer from 1 to 10;

(iii) $\text{R}^c - \text{O} -$, where R^c represents a C_{10} to C_{18} alkyl group; and

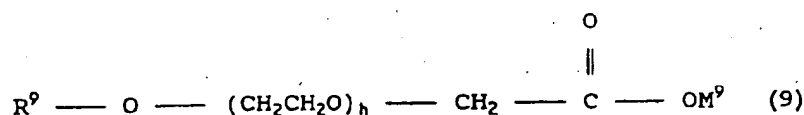
X^7 and Y^7 are independently from each other chosen from the counterions represented by M^1 in structure (1);

(G) Mono substituted phosphates of the following structure (8)



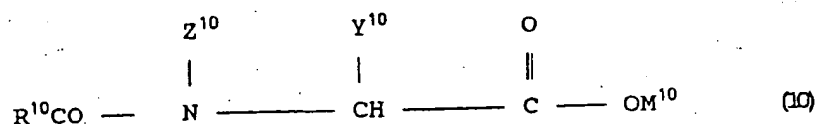
where R^8 represents a C_{10} to C_{18} alkyl group; M^{8a} and M^{8b} are independently from each other chosen from the group of species represented by M^1 in structure (1); and g is an integer from 0 to 3;

(H) Alkyl poly(ethylene glycol) acetates of the following structure (9)



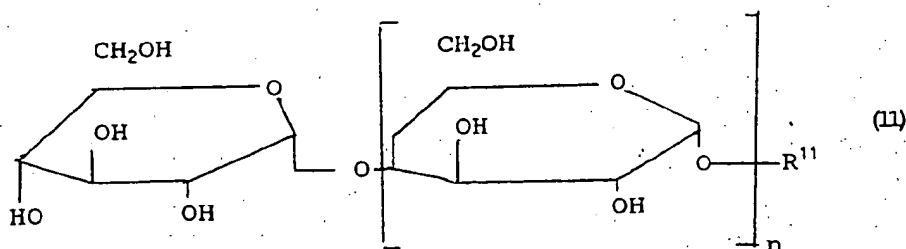
where R^9 represents a C_{10} to C_{18} alkyl group; M^9 is as M^1 in structure (1); and h is an integer from 1 to 10;

(I) Salts of N-acyl α -amino acids of the following structure (10)



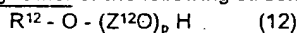
where $R^{10}CO$ represents a C_{10} to C_{18} acyl group; Z^{10} represents H or C_1 to C_2 alkyl; Y^{10} represents H, C_1 to C_3 alkyl or C_1 to C_3 alkyl substituted with a $COOH$ group; and M^{10} is chosen from the counterions represented by M^1 in structure (1);

(K) Alkyl polyglucosides of the following structure (11)



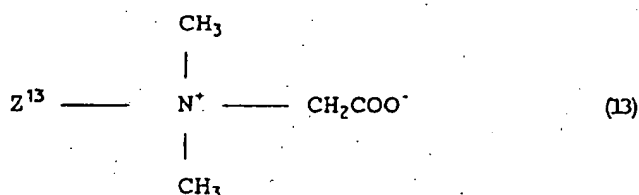
where R^{11} represents a C_{10} to C_{14} alkyl group; and n is an integer from 1 to 3;

(L) Poly(oxyalkylene) fatty alkyl ether of the following structure (12)



where R^{12} represents a C_6 to C_{18} alkyl group; Z^{12} is a C_2 or C_3 alkylene group; and p is an integer from 1 to 10;

(M) N-substituted betaines of the following structure (13)

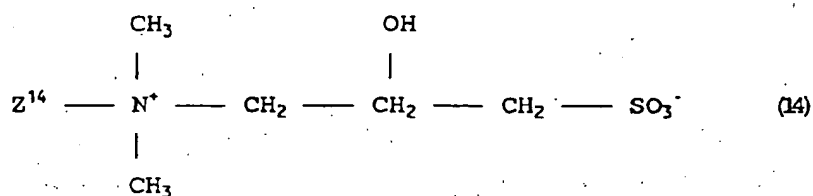


where Z^{13} represents

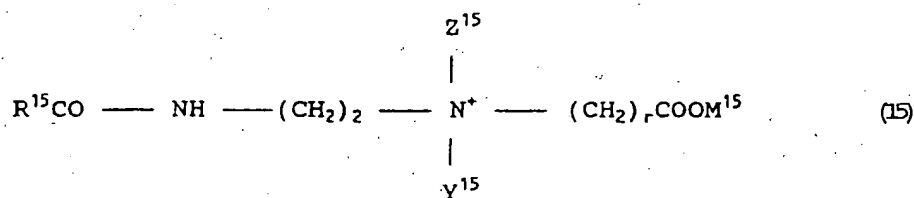
(i) a C_{10} to C_{18} alkyl group; or

(ii) a $R^{13}CO - NH - (CH_2)_3$ group, where $R^{13}CO$ represents a C_{10} to C_{18} acyl group;

(N) Sultaines of the following structure (14)



where Z¹⁴ represents a C₁₀ to C₁₈ alkyl group or a C₁₀ to C₁₈ acyl amido group;
 (O) Alkyl amphocarboxylates of the following structure (15)



where R¹⁵CO represents a C₁₀ to C₁₈ acyl group; Z¹⁵ and Y¹⁵ are independently from each other chosen from H, CH₂CH₂OH or (CH₂)_rCOO⁻; r is 1 or 2; and M¹⁵ is as M¹ in structure (1);
 the composition having a foam height of more than 130mm, as measured by the foam height test described herein.

2. A composition according to claim 1, which has a foam height of more than 150mm.
3. A composition according to claim 1, which has a foam height of more than 170mm.
4. A composition according to claim 1, which has a foam height of more than 190mm.
5. A composition according to any one of claims 1 to 4, in which the acyl group R¹CO in structure (1) represents a C₁₀ to C₁₄ acyl radical.
6. A composition according to any one of claims 1 to 5, in which the acyl lactylate is present in an amount from 15 to 30% by weight.
7. A composition according to any one of claims 1 to 6, in which the co-surfactant is present in an amount of 10 to 15% by weight.
8. A composition according to any one of claims 1 to 7, which comprises a quaternised ammonium hydroxy ethyl cellulose polymer.
9. Use of a composition according to any one of claims 1 to 8 as a skin or hair cleansing composition.

European Patent
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EUROPEAN SEARCH REPORT

Application Number

EP 93 30 1399

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	EP-A-0 194 097 (THE PROCTER & GAMBLE COMPANY) * page 12, line 25 - line 35; claims 1,8,9,14,29 *	1,6,7,9	A61K7/08 A61K7/50 C11D1/37 C11D1/83 C11D1/94
X	EP-A-0 371 803 (UNILEVER PLC.) * page 9, line 55 - page 10, line 14 * * page 13, line 10 - line 11; claims *	1	
P,X	WO-A-9 208 439 (L'OREAL) * page 7, line 15 - line 20; claims 1,10 * * page 9, line 7 - line 9 *	1,5-7,9	
P,X	WO-A-9 221 320 (MINNESOTA MINING AND MANUFACTURING COMP.) * the whole document *	1,6,7,9	
P,X	WO-A-9 206 669 (THE PROCTER & GAMBLE COMPANY) * the whole document *	1,6,7,9	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			A61K C11D
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 11 JUNE 1993	Examiner COUCKUYT P.J.R.
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons A : member of the same patent family, corresponding document	
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			

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